Economist Intelligence Unit

The Economist

Hot spots

Benchmarking global city competitiveness

A report from the Economist Intelligence Unit

Commissioned by

Contents

Preface

Hot spots is an Economist Intelligence Unit (EIU) research programme, commissioned by Citigroup, which ranks the competitiveness of 120 of the world's major cities. The EIU bears sole responsibility for the content of this report. The EIU's editorial team built the Global City Competitiveness Index, conducted the analysis and wrote the report. The findings and views expressed in this report do not necessarily reflect the views of the sponsor.

Our research drew on two main initiatives:

- A unique Index that compares 120 of the world's major urban agglomerations across eight distinct categories of competitiveness and 31 individual indicators. These cities collectively represent about 29% of the global economy, with a combined GDP of US$20.2tr. A detailed note on definitions and methodology is provided in the appendix.
- We conducted in-depth interviews with ten city experts, mayors and corporate executives, to get their insights on city competitiveness.

The Index was devised and constructed by an EIU research team led by Manoj Vohra. The author of the report was James Watson and the editor was Sudhir Vadaketh. Sarah Fister Gale and Premila Nazareth assisted with further interviews. Our sincere thanks go to the following interviewees (listed alphabetically by organisation) for their time and insights:

- **Dane Parker,** vice president, global facilities, real estate and environmental health and safety, Dell
- **Kevin Stolarick,** research director, Martin Prosperity Institute
- **Jaana Remes,** senior fellow, McKinsey Global Institute
- **Michael Bloomberg,** mayor, New York
- **Javier Sanchez-Reaza,** economist and urban specialist, OECD
- **Lamia Kamal-Chaoui,** head, urban development programme, OECD
- **Johannes Schmidt,** CEO, project and structured finance, Infrastructure & Cities and Industry, Siemens
- **Khoo Teng Chye,** executive director, Singapore's Centre for Liveable Cities
- **Todd Overmyer,** global head of retail, Triumph
- **Hariprasad Hegde,** global head of operations, Wipro

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Executive summary

Well over half of the world's population now lives in cities, generating more than 80% of global GDP. Already, global business is beginning to plan strategy from a city, rather than a country, perspective.

Given the rapid growth and development of many cities, particularly in emerging markets such as China and India, competition between them for business, investment and talent will only get fiercer.

Size alone does not determine a city's growth potential. While some megacities, such as New York and Tokyo, are immensely influential, there are smaller ones, such as Hong Kong and Singapore, which have established themselves as globally competitive centres in recent years. Meanwhile, emerging market cities such as Ahmedabad and Tianjin are witnessing double-digit economic growth and have the potential to grow even faster.

Competitiveness, however, is a holistic concept. While economic size and growth are important and necessary, several other factors determine a city's overall competitiveness, including its business and regulatory environment, the quality of human capital and indeed the quality of life. These factors not only help a city sustain a high economic growth rate, but also create a stable and harmonious business and social environment.

With this in mind, the Economist Intelligence Unit (EIU) was commissioned by Citigroup to develop a "Global City Competitiveness Index" to rank cities according to their demonstrated ability to attract capital, businesses, talent and visitors. Overall rankings and the Index methodology are summarised at the end of this chapter (see pages 6-10 for a table of the final scores and the appendix for a full explanation of the methodology).

To put the results of the index in context, the EIU interviewed experts around the world and reviewed existing research on the topic of city competitiveness for this briefing paper. Among the key findings of the research are as follows:

- **US and European cities are the world's most competitive today, despite concerns over ageing infrastructure and large budget deficits.** While there is much concern in the West about the impact of the financial crisis, which has slowed plans for urban renewal, this has not reduced the ability of US and European cities to attract capital, businesses, talent and tourists, which is ultimately what this Index

seeks to measure. New York (1st) and London (2nd) are rated as the world's two most competitive cities, while cities from the United States and Western Europe account for 24 of the top 30 cities. All these cities perform relatively well across all eight pillars of competitiveness measured in the Index, making them good all-round performers.

Although many Western countries have sombre growth outlooks over the next decade, some of their leading cities may be able to harness their legacy advantages and global connectivity to continue to compete and succeed against fast-growing emerging market cities.

- **Asia's economic rise is reflected in the economic competitiveness of its cities.** Asian cities dominate the "economic strength" category of the competitiveness Index—the most highly weighted category. All but five of the top 20 cities on this measure are Asian. Tianjin, Shenzhen and Dalian top the list, while nine other Chinese cities rank in the top 20. Singapore (15th), Bangalore (16th), Ahmedabad (19th) and Hanoi (joint 20th) round off the list. The top 32 Asian cities are all forecast to grow by at least 5% annually between now and 2016. Twelve of them will grow by at least 10%. This is in stark contrast to the low single-digit growth of most developed market cities in Europe and the United States.

- **A "middle tier" of mid-size cities is emerging as a key driver of global growth.** Although most firms target a combination of advanced economies and emerging market megacities, the fastest overall growth is found in a middle tier of mid-sized cities with populations of 2m-5m. Just nine of the 23 megacities (those with populations of at least 10m) tracked in this Index ranked among the top 30 cities on economic strength, for example. Indeed, mid-sized cities—ranging from Hanoi to Houston—dominate the growth rankings. They are collectively forecast to grow by 8.7% annually over the next five years, ahead of the megacities on which many firms focus.

- **The most significant advantage that developed country cities hold is their ability to develop and attract the world's top talent.** European and American cities dominate the human capital category of the Index. This stems primarily from the quality of their educational systems and the entrepreneurial mindset of their citizens (the two largest indicators within the category). But other factors bolster their performance too, such as cultural activities and a generally good quality of life. New York Mayor Michael Bloomberg says such factors are a key part of maintaining competitiveness: "I've always believed that talent attracts capital more effectively and consistently than capital attracts talent."

- **Infrastructure investments will drive emerging market growth, but more will be needed to secure their attractiveness to tomorrow's talent.** One of the most pressing challenges for emerging market cities in the decades ahead will be whether they can focus their development not just on skyscrapers, rail links and other infrastructure, but also on the softer aspects that will be crucial to their ability to attract and develop tomorrow's talent—including education, quality of life, and personal freedoms, among other things. Another more basic factor will be the ability, especially within China's cities, to grapple with the pollution challenges that threaten the health of their citizens.

- **Cities of all sizes can be competitive, but density is a factor in the competitiveness of larger cities.** The top ten most competitive cities in this ranking range from the world's biggest (Tokyo's estimated 36.7m people) to some of its smallest (Zurich's estimated 1.2m). Indeed, there is no correlation seen between size and competiveness in the Index. While bigger cities offer a greater pool of labour and higher demand, as well as potential economies of scale, if they are not planned correctly congestion and other issues can actively impede their competitiveness. Urban density is clearly linked to higher productivity: Hong Kong's efficient density is one reason it performs far better in the Index than, say, Mexico City's inefficient urban sprawl.

- **African and Latin American cities lag most on competitiveness.** All regions have leaders and laggards in terms of competitive cities. But while most regions host at least some competitive cities, Latin America in particular performs relatively poorly across most categories, including in physical capital (its best city, Santiago, is joint 66th) and institutional effectiveness (Panama City tops the list at 53rd). Just one city, Buenos Aires (60th), makes the top half of the Index. Africa lags further, with South Africa providing the only decent contenders, such as Johannesburg (67th) and Cape Town (73rd).

Nevertheless, the economies of several African and Latin American cities are set to expand rapidly in 2010-16. For instance, Lagos (6.8% cumulative average annual growth), Lima (6.3%), Bogotá (5.4%), Medellin (5.4%) and Nairobi (5.2%) are expected to be among the world's 40 fastest-growing cities over this period. With concomitant improvement in some other aspects of competitiveness—such as the quality of infrastructure and their regulatory environments—these cities could rise up the Index rankings quickly.

Methodology overview

Competitiveness is a holistic concept. While economic size and growth are important and necessary, several other factors determine a city's competitiveness, including its business and regulatory environment, the quality of human capital and cultural aspects. These factors not only help a city sustain high economic growth rates, but also create a stable and harmonious business and social environment.

Against this backdrop, we define 'competitiveness' as the demonstrated ability to attract capital, businesses, talent and visitors. We assessed 120 cities across the world and examined 31 indicators for each city. Indicators were grouped under eight distinct, thematic categories: economic strength, human capital, institutional effectiveness, financial maturity, global appeal, physical capital, environment and natural hazards, and social and cultural character. There are 21 qualitative and 10 quantitative indicators.

A city's overall ranking in the benchmark Index is a weighted score of the underlying categories. For a full breakdown of the categories, individual indicators, weightings and data sources, see the appendix.

Full rankings by category

Scores 0-100 where 100=best

Overall score			Economic strength			Physical capital			Financial Maturity			Institutional effectiveness		
1	New York	71.4	1	Tianjin	56.6	=1	Vancouver	100.0	=1	Zurich	100.0	=1	Zurich	96.0
2	London	70.4	2	Shenzhen	55.4	=1	Tokyo	100.0	=1	Toronto	100.0	=1	Geneva	96.0
3	Singapore	70.0	3	Dalian	55.0	=1	Stockholm	100.0	=1	Tokyo	100.0	3	Auckland	95.9
=4	Paris	69.3	4	New York	54.0	=1	Singapore	100.0	=1	Singapore	100.0	4	Sydney	94.8
=4	Hong Kong	69.3	5	Doha	53.7	=1	Melbourne	100.0	=1	New York	100.0	5	Melbourne	94.7
6	Tokyo	68.0	6	Guangzhou	53.6	=1	Hong Kong	100.0	=1	London	100.0	6	Singapore	87.8
7	Zurich	66.8	7	Shanghai	51.8	=1	Hamburg	100.0	=1	Hong Kong	100.0	=7	Vancouver	87.1
8	Washington	66.1	8	Tokyo	50.5	=1	Amsterdam	100.0	=1	Frankfurt	100.0	=7	Toronto	87.1
9	Chicago	65.9	9	Chongqing	49.9	=9	Zurich	98.2	=1	Chicago	100.0	=7	Montréal	87.1
10	Boston	64.5	10	Beijing	49.8	=9	Vienna	98.2	=10	Washington	83.3	=10	Washington	85.8
11	Frankfurt	64.1	11	Qingdao	49.4	=9	Sydney	98.2	=10	Vancouver	83.3	=10	Seattle	85.8
12	Toronto	63.9	12	Chengdu	49.2	=9	Oslo	98.2	=10	Sydney	83.3	=10	San Francisco	85.8
=13	San Francisco	63.3	13	Suzhou (Jiangsu)	48.1	=9	Geneva	98.2	=10	Shanghai	83.3	=10	Philadelphia	85.8
=13	Geneva	63.3	14	Hangzhou	47.6	=9	Frankfurt	98.2	=10	Seoul	83.3	=10	New York	85.8
15	Sydney	63.1	15	Singapore	46.0	=9	Copenhagen	98.2	=10	San Francisco	83.3	=10	Miami	85.8
16	Melbourne	62.7	16	Bangalore	45.9	=9	Barcelona	98.2	=10	Paris	83.3	=10	Los Angeles	85.8
17	Amsterdam	62.4	17	Los Angeles	45.7	=17	Osaka	94.6	=10	Melbourne	83.3	=10	Houston	85.8
18	Vancouver	61.8	18	Houston	45.6	=17	Madrid	94.6	=10	Kuala Lumpur	83.3	=10	Dallas	85.8
19	Los Angeles	61.5	19	Ahmedabad	45.3	=17	Boston	94.6	=10	Geneva	83.3	=10	Chicago	85.8
=20	Stockholm	60.5	=20	Hong Kong	43.8	=20	Washington	93.8	=10	Dublin	83.3	=10	Boston	85.8
=20	Seoul	60.5	=20	Hanoi	43.8	=20	Paris	93.8	=10	Dubai	83.3	=10	Atlanta	85.8
22	Montréal	60.3	22	Paris	43.6	=20	Berlin	93.8	=10	Boston	83.3	22	Hong Kong	85.3
=23	Houston	59.9	=23	Washington	43.4	23	Rome	92.9	=10	Beijing	83.3	23	Stockholm	84.2
=23	Copenhagen	59.9	=23	Dallas	43.4	=24	New York	92.0	=10	Amsterdam	83.3	=24	London	83.8
=25	Vienna	59.8	25	Abu Dhabi	42.5	=24	Brussels	92.0	=25	Shenzhen	66.7	=24	Birmingham	83.8
=25	Dallas	59.8	=26	Mumbai	42.4	=26	Taipei	90.2	=25	Moscow	66.7	26	Monaco	81.8
27	Dublin	59.5	=26	Delhi	42.4	=26	Seattle	90.2	=25	Montréal	66.7	27	Brussels	80.6
28	Madrid	59.4	28	Seattle	42.0	=26	Nagoya	90.2	=25	Madrid	66.7	28	Taipei	77.5
29	Seattle	59.3	=29	Taipei	41.9	=26	Milan	90.2	=25	Kuwait City	66.7	29	Amsterdam	77.4
30	Philadelphia	58.5	=29	London	41.9	=26	London	90.2	=25	Doha	66.7	30	Lisbon	76.6
=31	Berlin	58.2	31	San Francisco	41.5	=26	Dublin	90.2	=25	Copenhagen	66.7	=31	Tokyo	76.3
=31	Atlanta	58.2	=32	Moscow	41.4	=26	Chicago	90.2	=25	Abu Dhabi	66.7	=31	Osaka	76.3
33	Oslo	57.2	=32	Colombo	41.4	=26	Auckland	90.2	=33	Warsaw	50.0	=31	Nagoya	76.3
34	Brussels	57.1	34	Seoul	41.1	=34	San Francisco	89.3	=33	Vienna	50.0	=31	Fukuoka	76.3
35	Hamburg	56.8	35	Almaty	40.8	=34	Montréal	89.3	=33	Tel Aviv	50.0	=35	Hamburg	76.2
36	Auckland	56.7	=36	Ho Chi Minh City	40.6	=36	Toronto	88.4	=33	Taipei	50.0	=35	Frankfurt	76.2
=37	Taipei	56.6	=36	Chicago	40.6	=36	Seoul	88.4	=33	Stockholm	50.0	=35	Berlin	76.2
=37	Birmingham	56.6	38	Kuwait City	40.2	=36	Prague	88.4	=33	Seattle	50.0	38	Copenhagen	75.3
39	Beijing	56.0	39	Lima	40.0	=36	Philadelphia	88.4	=33	São Paulo	50.0	39	Vienna	74.7
40	Dubai	55.9	40	Warsaw	39.7	=36	Los Angeles	88.4	=33	Rome	50.0	40	Oslo	74.6
=41	Barcelona	55.8	41	Istanbul	39.6	=36	Fukuoka	88.4	=33	Rio de Janeiro	50.0	=41	Seoul	73.1
=41	Abu Dhabi	55.8	42	Pune	39.1	=36	Birmingham	88.4	=33	Prague	50.0	=41	Incheon	73.1
=43	Shanghai	55.2	43	Jakarta	38.3	43	Miami	86.6	=33	Philadelphia	50.0	=41	Busan	73.1
=43	Miami	55.2	=44	Philadelphia	38.0	=44	Tel Aviv	85.7	=33	Oslo	50.0	=44	Paris	72.7
45	Kuala Lumpur	55.0	=44	Kuala Lumpur	38.0	=44	Dallas	85.7	=33	Osaka	50.0	=44	Dubai	72.7
46	Prague	53.7	=46	Stockholm	37.9	=44	Abu Dhabi	85.7	=33	Nagoya	50.0	=44	Abu Dhabi	72.7
=47	Osaka	52.9	=46	Bucharest	37.9	=47	Incheon	84.8	=33	Muscat	50.0	=47	Johannesburg	70.8
=47	Milan	52.9	=46	Boston	37.9	=47	Atlanta	84.8	=33	Mumbai	50.0	=47	Durban	70.8
=47	Doha	52.9	49	Dubai	37.0	=49	Warsaw	82.1	=33	Monaco	50.0	=47	Cape Town	70.8
=50	Rome	52.3	50	Monterrey	36.9	=49	Kuala Lumpur	82.1	=33	Milan	50.0	=50	Madrid	69.2
=50	Nagoya	52.3	51	Riyadh	36.8	=49	Houston	82.1	=33	Miami	50.0	=50	Barcelona	69.2
52	Shenzhen	51.7	52	Atlanta	36.6	=49	Dubai	82.1	=33	Mexico City	50.0	52	Dublin	67.0
53	Warsaw	51.3	53	Vienna	36.4	=53	Shanghai	81.3	=33	Manila	50.0	53	Panama City	66.9
54	Monaco	51.0	54	Prague	36.2	=53	Muscat	81.3	=33	Los Angeles	50.0	54	Bucharest	66.1
55	Budapest	50.4	55	Kolkata	36.1	=55	Shenzhen	77.7	=33	Lisbon	50.0	55	Tel Aviv	65.3
56	Incheon	50.2	=56	Panama City	36.0	=55	Moscow	77.7	=33	Johannesburg	50.0	56	Prague	63.7
57	Lisbon	49.5	=56	Kraków	36.0	=55	Kraków	77.7	=33	Istanbul	50.0	=57	Warsaw	63.6
58	Moscow	49.4	=56	Hyderabad	36.0	=55	Budapest	77.7	=33	Houston	50.0	=57	Kraków	63.6
59	Tel Aviv	49.3	=56	Brussels	36.0	=55	Beijing	77.7	=33	Hamburg	50.0	=59	Rome	63.3

Social and cultural character			Human capital			Environment and natural hazards			Global appeal		
1	Zurich	97.5	1	Dublin	82.8	=1	Montréal	100.0	1	London	65.1
=2	Sydney	95.0	2	Hong Kong	82.4	=1	Frankfurt	100.0	2	Paris	64.8
=2	New York	95.0	3	Copenhagen	80.2	=1	Budapest	100.0	3	Tokyo	44.4
=2	Los Angeles	95.0	4	Paris	80.1	=1	Birmingham	100.0	4	Singapore	43.2
=5	Madrid	92.5	5	Geneva	78.9	5	Milan	95.8	5	Beijing	41.5
=5	London	92.5	6	Oslo	78.1	=6	Paris	91.7	6	Hong Kong	37.7
=5	Frankfurt	92.5	7	Zurich	77.9	=6	Berlin	91.7	7	Amsterdam	36.3
=5	Chicago	92.5	8	Seattle	77.7	=8	Zurich	87.5	8	New York	35.7
=5	Berlin	92.5	=9	Washington	77.6	=8	Vienna	87.5	9	Barcelona	33.8
=5	Barcelona	92.5	=9	San Francisco	77.6	=8	Singapore	87.5	10	Vienna	33.3
=11	Vienna	90.0	=11	Houston	77.3	=8	Riyadh	87.5	11	Washington	32.7
=11	Toronto	90.0	=11	Boston	77.3	=8	Pune	87.5	12	Madrid	32.3
=11	Paris	90.0	=11	Atlanta	77.3	=8	Monterrey	87.5	13	Seoul	30.6
=11	Miami	90.0	14	Dallas	77.0	=8	Madrid	87.5	14	Berlin	30.3
=11	Dublin	90.0	15	Los Angeles	76.9	=8	Geneva	87.5	15	Boston	27.2
=16	Vancouver	87.5	16	Philadelphia	76.8	=8	Doha	87.5	16	Toronto	26.8
=16	Prague	87.5	17	Chicago	76.7	=8	Chengdu	87.5	17	Zurich	26.1
=16	Montréal	87.5	=18	New York	76.5	=8	Bangalore	87.5	18	Sydney	25.5
=16	Melbourne	87.5	=18	Miami	76.5	=19	Vancouver	83.3	=19	Taipei	24.8
=16	Amsterdam	87.5	20	Auckland	76.4	=19	Stockholm	83.3	=19	Copenhagen	24.8
21	Milan	86.7	21	Vancouver	75.7	=19	Oslo	83.3	21	Brussels	24.7
=22	Washington	85.0	=22	Toronto	75.6	=19	Melbourne	83.3	22	Istanbul	24.1
=22	Stockholm	85.0	=22	London	75.6	=19	Hamburg	83.3	23	Shanghai	22.6
=22	San Francisco	85.0	24	Montréal	75.2	=19	Guadalajara	83.3	24	Chicago	22.1
=22	Monaco	85.0	25	Birmingham	74.8	=19	Boston	83.3	25	Rome	21.7
=22	Geneva	85.0	26	Stockholm	73.2	=19	Belo Horizonte	83.3	26	Stockholm	21.2
=22	Budapest	85.0	27	Madrid	72.2	=19	Atlanta	83.3	=27	Frankfurt	21.0
=28	Tokyo	84.2	28	Amsterdam	71.9	=28	Kuala Lumpur	79.2	=27	Buenos Aires	21.0
=28	Seoul	84.2	29	Barcelona	71.6	=28	Jakarta	79.2	29	Dublin	20.9
=28	Rome	84.2	30	Vienna	71.3	=28	Hyderabad	79.2	30	Los Angeles	20.5
=31	Seattle	82.5	31	Abu Dhabi	71.2	=28	Dallas	79.2	31	Dubai	20.0
=31	Philadelphia	82.5	32	Hamburg	70.8	=32	Toronto	75.0	32	Lisbon	19.5
=31	Houston	82.5	33	Frankfurt	70.5	=32	Sydney	75.0	=33	Prague	18.9
=31	Dallas	82.5	34	Berlin	70.3	=32	Prague	75.0	=33	Melbourne	18.9
=31	Copenhagen	82.5	35	Santiago	70.1	=32	Moscow	75.0	35	Kuala Lumpur	18.1
36	Athens	81.7	36	Singapore	69.8	=32	Monaco	75.0	36	Budapest	17.7
=37	Hamburg	80.0	37	Dubai	69.1	=32	London	75.0	37	Montréal	17.5
=37	Brussels	80.0	38	Melbourne	68.9	=32	Guangzhou	75.0	=38	São Paulo	16.6
=37	Boston	80.0	39	Sydney	68.7	=32	Dublin	75.0	=38	Bangkok	16.6
=37	Atlanta	80.0	40	Cape Town	67.9	=32	Copenhagen	75.0	40	Moscow	16.2
41	Hong Kong	79.2	41	Athens	67.8	=32	Auckland	75.0	41	Mexico City	15.5
=42	Singapore	77.5	42	Bangkok	66.7	=32	Abu Dhabi	75.0	42	Milan	15.4
=42	Lisbon	77.5	=43	Buenos Aires	66.6	=43	Warsaw	70.8	=43	Vancouver	15.3
=42	Kraków	77.5	=43	Brussels	66.6	=43	Suzhou (Jiangsu)	70.8	=43	San Francisco	15.3
=45	Oslo	75.0	45	Taipei	66.1	=43	Seoul	70.8	45	Geneva	15.2
=45	Auckland	75.0	46	Kuala Lumpur	65.9	=43	Rome	70.8	46	Athens	14.0
=47	São Paulo	74.2	47	Shenzhen	65.7	=43	Porto Alegre	70.8	47	Oslo	13.9
=47	Rio de Janeiro	74.2	=48	Rome	65.3	=43	Philadelphia	70.8	48	Delhi	12.0
=47	Nagoya	74.2	=48	Milan	65.3	=43	Kiev	70.8	49	Rio de Janeiro	11.9
=47	Busan	74.2	50	Nairobi	65.0	=43	Incheon	70.8	=50	Santiago	11.7
51	Warsaw	72.5	51	Delhi	64.8	=43	Houston	70.8	=50	Philadelphia	11.7
=52	Osaka	71.7	52	Mexico City	64.6	=43	Durban	70.8	52	Osaka	11.4
=52	Incheon	71.7	=53	Johannesburg	64.3	=43	Chicago	70.8	53	Atlanta	11.0
54	Birmingham	70.0	=53	Doha	64.3	=43	Brussels	70.8	54	Warsaw	10.3
55	Istanbul	68.3	55	Lima	64.2	=43	Barcelona	70.8	55	Lima	10.2
56	Bangkok	67.5	=56	Tokyo	64.1	=43	Ankara	70.8	56	Incheon	9.8
=57	Tel Aviv	66.7	=56	Beijing	64.1	=43	Amsterdam	70.8	=57	Miami	9.3
=57	Fukuoka	66.7	58	Lisbon	64.0	=43	Almaty	70.8	=57	Bogotá	9.3
=57	Buenos Aires	66.7	59	Tel Aviv	63.8	=59	Washington	66.7	=59	Seattle	9.2

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continues from the full rankings by category

Overall score			Economic strength			Physical capital			Financial Maturity			Institutional effectiveness		
60	Buenos Aires	49.2	=60	Bogotá	35.9	=55	Athens	77.7	=33	Dallas	50.0	=59	Milan	63.3
61	Bangkok	49.0	=60	Bangkok	35.9	61	Busan	76.8	=33	Buenos Aires	50.0	61	Porto Alegre	63.2
62	São Paulo	48.3	62	Hamburg	35.7	62	Saint Petersburg	75.0	=33	Brussels	50.0	62	Santiago	63.1
63	Fukuoka	47.7	63	Mexico City	35.5	63	Kuwait City	74.1	=33	Birmingham	50.0	63	Belo Horizonte	61.5
=64	Guangzhou	47.4	64	Muscat	35.4	64	Lisbon	73.2	=33	Berlin	50.0	64	Athens	60.0
=64	Busan	47.4	65	São Paulo	35.3	65	Monaco	72.3	=33	Bangkok	50.0	65	Budapest	59.8
66	Kraków	47.3	66	Ankara	35.1	=66	Suzhou (Jiangsu)	71.4	=33	Auckland	50.0	=66	São Paulo	59.6
67	Johannesburg	47.1	67	Frankfurt	35.0	=66	Santiago	71.4	=33	Atlanta	50.0	=66	Rio de Janeiro	59.6
=68	Santiago	46.7	68	Buenos Aires	34.6	=66	Qingdao	71.4	=68	Tianjin	33.3	68	Kuala Lumpur	57.1
=68	Delhi	46.7	69	Budapest	34.5	=66	Guangzhou	71.4	=68	Santiago	33.3	=69	Buenos Aires	54.4
70	Mumbai	46.6	70	Chennai	34.2	=66	Doha	71.4	=68	Saint Petersburg	33.3	=69	Bangkok	54.4
71	Mexico City	46.2	71	Incheon	34.1	=71	Dalian	69.6	=68	Riyadh	33.3	=71	Mumbai	52.0
72	Athens	46.1	72	Manila	34.0	=71	Buenos Aires	69.6	=68	Panama City	33.3	=71	Delhi	52.0
73	Cape Town	45.9	=73	Oslo	33.9	=73	Tianjin	67.0	=68	Nairobi	33.3	=71	Ahmedabad	52.0
74	Istanbul	45.5	=73	Dhaka	33.9	=73	São Paulo	67.0	=68	Kraków	33.3	=74	Surabaya	51.4
75	Tianjin	45.4	75	Amsterdam	33.8	=73	Panama City	67.0	=68	Karachi	33.3	=74	Jakarta	51.4
=76	Rio de Janeiro	44.9	=76	Monaco	33.6	=73	Hangzhou	67.0	=68	Jakarta	33.3	76	Bandung	51.3
=76	Bucharest	44.9	=76	Cairo	33.6	=73	Bangkok	67.0	=68	Incheon	33.3	77	Medellín	50.4
78	Panama City	44.8	78	Barcelona	33.4	=78	Lima	66.1	=68	Guangzhou	33.3	=78	Pune	50.1
79	Bangalore	44.6	=79	Nagoya	33.0	=78	Johannesburg	66.1	=68	Fukuoka	33.3	=78	Kolkata	50.1
80	Kuwait City	44.2	=79	Medellín	33.0	=80	Rio de Janeiro	65.2	=68	Delhi	33.3	=78	Hyderabad	50.1
81	Jakarta	44.1	81	Guadalajara	32.9	=80	Mexico City	65.2	=68	Chongqing	33.3	=78	Chennai	50.1
82	Dalian	44.0	82	Alexandria	32.8	=80	Istanbul	65.2	=68	Cape Town	33.3	=78	Bangalore	50.1
83	Chengdu	43.5	83	Madrid	32.7	=80	Bucharest	65.2	=68	Cairo	33.3	=83	Istanbul	49.0
84	Suzhou (Jiangsu)	43.4	=84	Toronto	32.3	=80	Ankara	65.2	=68	Busan	33.3	=83	Ankara	49.0
85	Manila	43.2	=84	Copenhagen	32.3	=80	Almaty	65.2	=68	Budapest	33.3	85	Bogotá	48.4
86	Muscat	43.0	86	Berlin	32.1	=86	Delhi	64.3	=68	Bucharest	33.3	=86	Mexico City	47.1
87	Chongqing	42.9	=87	Santiago	32.0	=86	Chongqing	64.3	=68	Bogotá	33.3	=86	Guadalajara	47.1
88	Lima	42.5	=87	Osaka	32.0	=88	Karachi	62.5	=68	Barcelona	33.3	88	Monterrey	47.0
89	Bogotá	42.3	=87	Karachi	32.0	=88	Chengdu	62.5	=68	Bangalore	33.3	89	Manila	45.6
90	Monterrey	42.2	=87	Birmingham	32.0	=90	Riyadh	61.6	=68	Athens	33.3	90	Lima	45.2
91	Qingdao	42.1	=91	Miami	31.5	=90	Manila	61.6	=68	Ankara	33.3	91	Doha	42.9
92	Ahmedabad	41.9	=91	Busan	31.5	=90	Jakarta	61.6	=68	Almaty	33.3	92	Dhaka	41.8
93	Hangzhou	41.6	93	Sydney	31.3	=90	Cape Town	61.6	=93	Tehran	16.7	93	Muscat	39.8
94	Durban	41.2	94	Dublin	31.2	94	Medellín	60.7	=93	Suzhou (Jiangsu)	16.7	94	Kiev	39.0
95	Ankara	40.9	95	Melbourne	31.1	95	Durban	58.9	=93	Surabaya	16.7	=95	Tianjin	37.6
96	Medellín	40.0	96	Montréal	30.7	96	Mumbai	58.0	=93	Qingdao	16.7	=95	Suzhou (Jiangsu)	37.6
97	Pune	39.8	97	Kiev	30.5	=97	Monterrey	57.1	=93	Pune	16.7	=95	Shenzhen	37.6
=98	Hyderabad	39.4	=98	Zurich	30.1	=97	Bogotá	57.1	=93	Porto Alegre	16.7	=95	Shanghai	37.6
=98	Belo Horizonte	39.4	=98	Cape Town	30.1	99	Surabaya	55.4	=93	Monterrey	16.7	=95	Qingdao	37.6
=100	Saint Petersburg	39.3	100	Vancouver	29.9	=100	Ho Chi Minh City	54.5	=93	Medellín	16.7	=95	Karachi	37.6
=100	Almaty	39.3	=101	Tel Aviv	29.7	=100	Colombo	54.5	=93	Lima	16.7	=95	Hangzhou	37.6
=102	Porto Alegre	39.0	=101	Milan	29.7	=102	Guadalajara	53.6	=93	Lagos	16.7	=95	Guangzhou	37.6
=102	Guadalajara	39.0	=103	Lagos	29.6	=102	Ahmedabad	53.6	=93	Kolkata	16.7	=95	Dalian	37.6
104	Hanoi	38.8	=103	Bandung	29.6	104	Hanoi	52.7	=93	Kiev	16.7	=95	Chongqing	37.6
105	Chennai	38.1	=105	Rome	29.4	=105	Porto Alegre	50.9	=93	Hyderabad	16.7	=95	Beijing	37.6
=106	Riyadh	37.8	=105	Beirut	29.4	=105	Cairo	50.9	=93	Ho Chi Minh City	16.7	106	Colombo	36.0
=106	Kolkata	37.8	107	Geneva	29.3	=105	Belo Horizonte	50.9	=93	Hanoi	16.7	107	Chengdu	35.8
108	Kiev	36.8	108	Saint Petersburg	29.0	108	Kiev	50.0	=93	Hangzhou	16.7	108	Kuwait City	35.5
109	Ho Chi Minh City	36.5	=109	Porto Alegre	28.9	=109	Kolkata	49.1	=93	Guadalajara	16.7	=109	Ho Chi Minh City	34.6
110	Surabaya	35.9	=109	Belo Horizonte	28.9	=109	Hyderabad	49.1	=93	Durban	16.7	=109	Hanoi	34.6
111	Colombo	35.6	111	Auckland	28.8	=109	Chennai	49.1	=93	Dhaka	16.7	=111	Saint Petersburg	34.2
112	Karachi	35.5	112	Johannesburg	28.7	=109	Beirut	49.1	=93	Dalian	16.7	=111	Moscow	34.2
113	Cairo	35.0	113	Surabaya	28.0	=113	Bangalore	47.3	=93	Colombo	16.7	113	Riyadh	33.9
114	Bandung	34.8	114	Rio de Janeiro	27.9	=113	Bandung	47.3	=93	Chennai	16.7	114	Beirut	31.5
115	Nairobi	34.6	115	Durban	26.5	=115	Pune	44.6	=93	Chengdu	16.7	115	Nairobi	31.2
116	Alexandria	31.8	116	Fukuoka	26.4	=115	Nairobi	44.6	=93	Belo Horizonte	16.7	116	Almaty	29.2
117	Beirut	30.6	117	Tehran	25.7	117	Tehran	42.9	=93	Beirut	16.7	117	Alexandria	28.7
118	Dhaka	27.7	118	Lisbon	24.3	118	Alexandria	40.2	=93	Bandung	16.7	118	Cairo	28.6
119	Lagos	27.6	119	Athens	24.1	119	Lagos	39.3	=93	Alexandria	16.7	119	Lagos	23.2
120	Tehran	27.2	120	Nairobi	23.3	120	Dhaka	20.5	=93	Ahmedabad	16.7	120	Tehran	21.2

Social and cultural character			Human capital			Environment and natural hazards			Global appeal		
60	Manila	65.8	=60	Shanghai	63.7	=59	Tel Aviv	66.7	=59	Birmingham	9.2
=61	Taipei	61.7	=60	Nagoya	63.7	=59	Tehran	66.7	61	Hamburg	8.8
=61	Saint Petersburg	61.7	62	Durban	63.5	=59	Shenzhen	66.7	62	Johannesburg	8.5
=61	Moscow	61.7	=63	Osaka	63.3	=59	San Francisco	66.7	63	Houston	8.4
=61	Johannesburg	61.7	=63	Monterrey	63.3	=59	New York	66.7	=64	Nairobi	8.3
65	Santiago	60.0	65	Prague	63.2	=59	Kraków	66.7	=64	Cape Town	8.3
=66	Mumbai	58.3	66	Fukuoka	63.1	=59	Hong Kong	66.7	66	Cairo	8.1
=66	Lima	58.3	67	Medellín	63.0	=59	Hanoi	66.7	=67	Tel Aviv	8.0
=66	Ankara	58.3	68	Bogotá	61.9	=59	Cape Town	66.7	=67	Mumbai	8.0
69	Kuala Lumpur	57.5	69	Seoul	61.7	=59	Buenos Aires	66.7	69	Doha	7.7
=70	Panama City	56.7	70	Muscat	61.6	=59	Bangkok	66.7	70	Dallas	7.0
=70	Bucharest	56.7	71	Hangzhou	61.4	=59	Ahmedabad	66.7	71	Auckland	6.5
72	Mexico City	55.8	72	Suzhou (Jiangsu)	61.3	=72	Tokyo	62.5	=72	Panama City	5.9
=73	Shanghai	53.3	73	Tianjin	61.1	=72	Shanghai	62.5	=72	Abu Dhabi	5.9
=73	Monterrey	53.3	=74	Guangzhou	61.0	=72	Seattle	62.5	=74	Jakarta	5.7
=73	Beijing	53.3	=74	Dalian	61.0	=72	São Paulo	62.5	=74	Bucharest	5.7
=76	Porto Alegre	51.7	76	Incheon	60.9	=72	Rio de Janeiro	62.5	=76	Manila	5.2
=76	Belo Horizonte	51.7	77	Mumbai	60.4	=72	Osaka	62.5	=76	Kraków	5.2
78	Delhi	50.8	78	Chengdu	60.2	=72	Nairobi	62.5	78	Nagoya	5.1
=79	Kiev	49.2	=79	Kuwait City	60.0	=72	Nagoya	62.5	79	Hanoi	4.7
=79	Dubai	49.2	=79	Budapest	60.0	=72	Fukuoka	62.5	80	Busan	4.6
=79	Cape Town	49.2	81	Qingdao	59.8	=72	Chennai	62.5	81	Saint Petersburg	4.4
82	Medellín	45.0	82	Moscow	59.5	=72	Busan	62.5	82	Beirut	4.3
83	Bogotá	42.5	83	Jakarta	59.0	=72	Athens	62.5	83	Hangzhou	4.0
=84	Cairo	41.7	84	Kiev	58.6	=84	Taipei	58.3	84	Kiev	3.9
=84	Alexandria	41.7	85	Chongqing	58.4	=84	Surabaya	58.3	85	Colombo	3.8
=86	Kolkata	40.8	=86	Hyderabad	58.1	=84	Mexico City	58.3	=86	Kuwait City	3.6
=86	Jakarta	40.8	=86	Ho Chi Minh City	58.1	=84	Medellín	58.3	=86	Guangzhou	3.6
=86	Beirut	40.8	=86	Busan	58.1	=84	Lisbon	58.3	88	Chennai	3.5
=86	Bangalore	40.8	89	Chennai	58.0	=84	Delhi	58.3	=89	Riyadh	3.4
=90	Guangzhou	38.3	90	Bangalore	57.9	=84	Chongqing	58.3	=89	Ho Chi Minh City	3.4
=90	Guadalajara	38.3	=91	Kolkata	57.8	=84	Bogotá	58.3	=91	Muscat	3.0
=90	Chengdu	38.3	=91	Guadalajara	57.8	=84	Beijing	58.3	=91	Hyderabad	3.0
=93	Durban	36.7	=93	Pune	57.4	=84	Alexandria	58.3	93	Lagos	2.8
=93	Abu Dhabi	36.7	=93	Hanoi	57.4	=94	Saint Petersburg	54.2	94	Guadalajara	2.7
95	Doha	34.2	95	Ahmedabad	57.3	=94	Qingdao	54.2	95	Fukuoka	2.6
=96	Suzhou (Jiangsu)	33.3	96	São Paulo	56.8	=94	Panama City	54.2	=96	Monaco	2.5
=96	Shenzhen	33.3	=97	Warsaw	56.6	=94	Manila	54.2	=96	Dhaka	2.5
=98	Hyderabad	30.8	=97	Manila	56.6	=94	Los Angeles	54.2	=96	Bandung	2.5
=98	Dalian	30.8	99	Karachi	56.3	=94	Johannesburg	54.2	=99	Porto Alegre	2.2
=98	Chennai	30.8	100	Saint Petersburg	56.1	=94	Hangzhou	54.2	=99	Medellín	2.2
=101	Muscat	29.2	101	Surabaya	55.5	=101	Tianjin	50.0	101	Durban	1.9
=101	Kuwait City	29.2	102	Bucharest	55.0	=101	Santiago	50.0	=102	Shenzhen	1.7
=103	Pune	28.3	103	Bandung	54.7	=101	Mumbai	50.0	=102	Bangalore	1.7
=103	Nairobi	28.3	104	Monaco	54.5	=101	Dubai	50.0	104	Ankara	1.6
=103	Ahmedabad	28.3	105	Kraków	54.2	=101	Dalian	50.0	=105	Monterrey	1.5
=106	Surabaya	25.8	106	Rio de Janeiro	53.6	=106	Muscat	45.8	=105	Chengdu	1.5
=106	Riyadh	25.8	107	Almaty	53.3	=106	Miami	45.8	107	Ahmedabad	1.4
=106	Bandung	25.8	108	Belo Horizonte	52.2	=108	Kolkata	41.7	=108	Tehran	1.3
109	Almaty	24.2	109	Panama City	52.1	=108	Cairo	41.7	=108	Belo Horizonte	1.3
=110	Lagos	22.5	110	Porto Alegre	51.4	=108	Bucharest	41.7	=108	Alexandria	1.3
=110	Colombo	22.5	111	Beirut	49.2	=108	Bandung	41.7	=111	Qingdao	1.0
=112	Ho Chi Minh City	21.7	112	Istanbul	48.5	=112	Lima	37.5	=111	Kolkata	1.0
=112	Hanoi	21.7	113	Colombo	48.3	=112	Kuwait City	37.5	=111	Karachi	1.0
=114	Tianjin	20.8	114	Cairo	48.2	=112	Ho Chi Minh City	37.5	=114	Suzhou (Jiangsu)	0.9
=114	Qingdao	20.8	115	Alexandria	45.7	=112	Colombo	37.5	=114	Chongqing	0.9
=114	Hangzhou	20.8	116	Lagos	44.2	=116	Lagos	33.3	=116	Tianjin	0.8
117	Dhaka	20.0	117	Ankara	43.9	=116	Karachi	33.3	=116	Almaty	0.8
=118	Tehran	15.8	118	Riyadh	41.4	=116	Istanbul	33.3	118	Dalian	0.7
=118	Chongqing	15.8	119	Tehran	40.6	119	Dhaka	16.7	119	Surabaya	0.6
120	Karachi	9.2	120	Dhaka	36.3	120	Beirut	12.5	120	Pune	0.4

Introduction: Striving for competitiveness

The balance of power between countries and cities is at an interesting juncture today. While global trade and power is usually defined at a country level, cities are increasingly likely to be the focus of global business in the decade ahead. One obvious driver of this trend is the rapid and sustained rate of global urbanisation, with well over half of the world's population now living in cities, generating more than 80% of global GDP.

Indeed, the 120 cities assessed in this report account for an outsized proportion of the global economy. With a combined population of about 750m, they generated some US$20.2trn dollars in GDP in 2008 (measured in purchasing power parity), or about 29% of the global total. This gives them a larger contribution to the global economy than the European Union (US$15.5trn), United States (US$14.3trn) or China (US$8.3trn), according to the Economist Intelligence Unit (EIU). In short, cities matter.

Even more compelling is their average real rate of growth: from 2010-16, these 120 cities are forecast to expand by an average of 4.8%, with double-digit rates likely across many Chinese cities in particular. Boston Consulting Group considers the rise of cities, especially in emerging markets, to be the "single largest commercial growth opportunity globally in the decade ahead".[1] Although the average population growth rate across all these cities is low, at just over 1%, this implies that a city around the size of Chengdu (estimated population 8.4m) is added to the collective total each year—the equivalent of some 22,000 new people moving into the city each and every day.

Businesses are taking note. Todd Overmyer, the global head of retail for Triumph, a multi-billion dollar European lingerie brand that already operates in over 120 countries, says his firm views its future expansion through the prism of "strategic countries and then key cities". The most obvious example is China. Many firms recognise a need to enter this market today, but they then quickly define their strategy according to the key cities that matter most.

In this regard, cities compete with each other in a very material sense. "They have an active role in competing nationally and globally for investment flows. They also compete with other cities for

[1] *Winning in emerging market cities*, Boston Consulting Group, Sep 2010

skills and talents that are globally mobile," explains Javier Sanchez-Reaza, an urban economist at the OECD. Dane Parker, a vice president at Dell, a technology firm, who is responsible for the firm's global footprint, notes that when assessing where to locate new operations within a country, cities not only compete in terms of their overall availability of talent, potential growth and cost levels, but also in terms of direct and indirect incentives they might offer businesses for relocating there. While this Index does not consider the potential incentives cities might offer, it directly seeks to measure and rank cities by their ability to attract and retain skilled labour, businesses and capital.

Finding a competitive advantage

No city can hold an absolute advantage in every dimension that could matter to a prospective investor. A manufacturer seeking cheap land, good shipping links and a low-cost workforce will inevitably be attracted to a different city than a technology firm seeking highly skilled graduates to develop their next-generation product. Even firms in the same sector, such as consumer goods, will find different cities appealing. Luxury brands, such as Louis Vuitton, will consider the purchasing power of local residents, as well as the city's relevance to fashion, while a low-cost mobile phone handset maker might focus on raw population growth as a key metric. The appeal of New York and London at the top of the rankings is largely due to their appeal to a wide range of businesses, even though both are regarded as world-beating financial services hubs.

As such, even the most competitive cities in our ranking will be unappealing prospects to certain firms with particular needs. Rather, they are simply the cities that hold the widest appeal to a diverse array of potential needs. For cities seeking to do better at attracting future investment, they need to focus on developing and enhancing their comparative advantage and develop a niche: whether cheap land, a dense consumer populace, a high quality education, a reputation for creativity, or whatever else. This comparative advantage can then help them drive future growth.

Of course, while nearly all cities strive for growth, it is also clear that growth can come in many different forms, which in turn affects a city's future competitiveness. Kevin Stolarick, research director at the Martin Prosperity Institute, a Canadian think tank that is part of the Rotman School of Management at the University of Toronto, gives the example of two cities in the US. "Some places like Portland, Oregon are fighting tooth and nail to prevent urban sprawl whereas a place like Phoenix, Arizona is doing everything it possibly could to promote growth."

While Portland has continued to pursue growth, it maintains a tight control on its physical makeup: it wants to be smaller, more easily commutable, and environmentally friendly. This adds to its appeal for the target market it is aiming for—service and knowledge-based firms—even though it would naturally deter other kinds of investors. Such shifts are evident across the world. In Shanghai, for example, policymakers are actively fostering the city as a sophisticated new financial hub, while shifting inland the manufacturers that initially propelled growth there.

Overall, this Index provides a balanced view across eight broad categories that shape competitiveness. No city excels at all of these facets. As a result, a diverse range of cities tops each of the eight specific pillars of competitiveness, from Tianjin (economic strength) and Dublin (human capital) to Zurich (joint first in financial maturity, institutional effectiveness, and social and cultural character),

and Vancouver (joint first in physical capital). While it is many of the world's most prominent global cities that rank highest overall—New York, London, Singapore, Paris and Hong Kong—this research highlights the new challengers seeking to compete with them in the decade ahead.

This report reviews the dimensions of this competition. It considers how newly emerging cities compete with more developed cities, not least as the world's centre of economic gravity shifts eastwards. It reviews where the global centres of growth are likely to be found in coming years and explores the link between talent and competitiveness. Finally, it reviews whether size matters in terms of city competitiveness.

CASE STUDY: Singapore—Asia's most competitive city

Singapore ranks third overall in the Index and is the highest-placed Asian city. The city-state ranks particularly well in terms of its physical capital (ranked joint first overall), financial maturity (joint first), institutional effectiveness (6th), environment and natural hazards (joint 8th) and global appeal (4th). For locals, none of this will be surprising, given the city's efficient transport, lean bureaucracy, safe and clean environment, and its increasingly highly regarded reputation internationally.

Fundamental to its competitiveness has been its openness to the rest of the world, says Mr Khoo Teng Chye, executive director of Singapore's Centre for Liveable Cities, a government think tank. "We have always been a hub open to the flow of people, ideas, capital, goods and services," he says. In particular, he says, the city has always strived to attract both businesses and human capital. It has lured in businesses by, among other things, offering tax incentives and streamlining license approvals.

On the talent front, the city has focussed on what Mr Khoo says are the three aspects of liveability: quality of life (safety, good schools and so on); competitive economy (high quality jobs); and environmental sustainability. Importantly, Singapore emphasised the third element from very early on. "Environmental regulations and enforcement even in the late 1960s were very tough," says Mr Khoo. Despite being a small, developing economy then, Singapore was ready to turn away industries that could not meet its strict environmental regulations, he says, because it "did not want factories here that would pollute the environment".

In addition, the city promoted cleanliness through numerous public campaigns as well as concerted clean-up efforts, such as one involving the Singapore River. It also embarked on a systematic tree-planting programme in order to "green" the city. This involved very detailed regulations that, for instance, specify the ratio of trees to parking spaces in the city.

Mr Khoo contrasts Singapore's forward-thinking, long-term approach to sustainability with some other cities, which pursue what he calls a "Grow first and clean up later" approach. That is to their detriment, he argues, because "beyond a certain point they realise there is too much pollution, and they end up turning away people and investors."

Rebalancing West and East: Legacy versus growth

The relative power of cities is something that shifts only gradually. One obvious factor determining the pace of this shift is infrastructure. The core infrastructure that shapes and defines urban landscapes—metro lines, skyscrapers, stadiums, universities, airports and other physical geology—evolves over decades. Developed markets are, in part, termed as such because they largely have this infrastructure in place. This gives them a huge advantage in terms of their physical assets, when compared to newer cities around the world.

Of course, it is evident to any traveller that this picture is changing quickly: visitors to Beijing's modern and efficient airport, for example, would compare it favourably to many ageing airports in American cities, including those in New York. Combined with the political rhetoric in many Western cities about their crumbling infrastructure, it would seem that a rebalancing process is underway.

But if such a shift is indeed underway, it is not yet complete. In key metrics such as quality of physical infrastructure and quality of telecommunications infrastructure (which account for the bulk of the physical capital category), developed cities perform better than their counterparts in emerging markets. In other aspects, such as the development of talent, they also clearly outperform the rest of the world (see chapter Talent, jobs and quality of life).

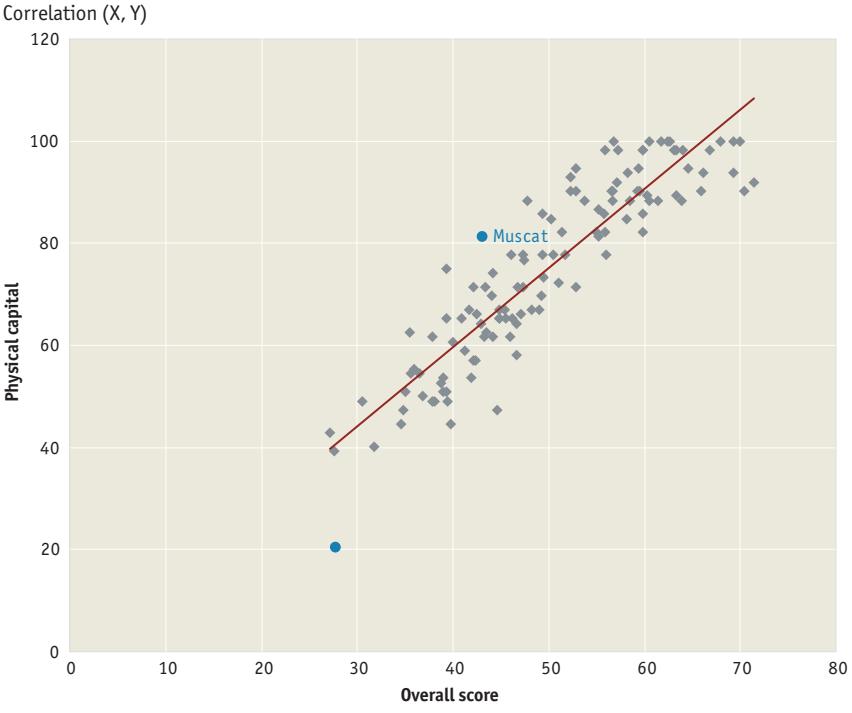
In particular, European cities, from Stockholm and Frankfurt, to Amsterdam, Vienna and Zurich, all rank highly based on their comprehensive public transport systems, well-established utility networks, high quality building stock, and more. Creating this infrastructure has required a lot of time and capital, but it serves to ease the flow of commerce and people—from sending a parcel to a client, to exporting goods to new markets, to enabling staff to easily commute to work.

By contrast, the top-ranked emerging market city in terms of physical infrastructure is Kuala Lumpur, in joint 49th position. In short, from a physical perspective, a long history of investment matters.

Even though physical capital is weighted to account for just 10% of any given city's overall score,

there is a clear correlation between overall city competitiveness and physical capital (see chart 1). This suggests that physical capital is a prerequisite for competitiveness—good infrastructure that undergirds a city probably boosts all its other scores.

Chart 1: Overall competitiveness versus physical capital
Calculated score 0-100 (100=best)



Source: Economist Intelligence Unit

However, it is clear to any business leader seeking growth that the tectonic plates of global economic development are shifting. In terms of economic competitiveness, the weight of power is moving rapidly eastwards, as high growth Asian economies jostle to compete with their more developed rivals.

The fastest growing West European city is forecast to be Stockholm, expanding by an average of 3.2% over 2010-2016; all others will grow by less than 3% per annum over that period and many by far less, with the economies of Athens and Lisbon expected to contract. Some American cities, such as Dallas, Houston and Seattle, expect to do better, growing at over 4%.

But growth rates in Asia put this all in stark relief: 12 cities in that region expect to expand by more than 10% per annum over that period, with Chinese cities dominating the list. Thirty-two of the 44 Asian cities ranked are forecast to expand by 5% or more. The only Asian cities expanding at European rates of growth are those in already developed Australia or Japan.

In turn, this economic boom is altering the landscape of leading cities more rapidly than at any point in human history. In an unprecedentedly short space of time, cities such as Dubai, Shanghai and Shenzhen have carved out a new physical identity to match their rapid economic emergence. China's investment in urban infrastructure increased at some 20% year-on-year over the last decade, building out roads, bridges, mass transit systems, utilities and so on.[2] This isn't expected to slow: in its 2011-15 economic plan, the country's leadership allocated a further US$1trn towards urban infrastructure.

By contrast, many developed world cities are grappling with sizeable budget deficits, with a growing number at risk of defaulting, putting cutbacks, rather than growth and development, on top of their agenda. Johannes Schmidt, the CEO for project and structured finance in the Infrastructure & Cities and Industry unit at Siemens, a conglomerate, highlights how infrastructure projects in Europe and the US have been cut back, while those in Asia continue apace. "Asian cities continue growing very strongly in terms of the projects started. In Europe, by contrast, there's been a drastic reduction from the highs of 2007-08," he says. In particular, some renewable energy-related projects in Europe have been cancelled, following reductions in government subsidies and feed-in tariffs in the face of public debt constraints. Similarly, he notes that infrastructure projects in the US have gone "fairly flat". However, energy and

[2] *Preparing for China's urban billion*, McKinsey Global Institute, Feb 2009

water projects remain key priorities across Asia.

All this underlines a related finding from the Index—a city's future economic strength (the most highly weighted category, see next chapter) has no correlation with its current physical capital (see chart 2). This is intuitively right: a great transport system will surely aid worker productivity, as it does across Europe, but it does not necessarily indicate a high growth city.

Chart 2: Physical capital versus economic strength
Calculated score 0-100 (100=best)

Source: Economist Intelligence Unit

Case study: Wipro—From East to West to East

India's IT services industry has grown rapidly over the past decade, as its firms' operational footprints have expanded across the entire world. Consider Wipro, one of India's largest IT services firms with fiscal year 2010-11 (April-March) revenues of US$6.9bn.[3] Wipro's IT business today employs some 131,000 people in 55 countries.

Wipro's IT business has delivery centers in ten Indian cities and in more than 20 cities outside of India. These 'global delivery centres' generally serve offshore as well as onsite customers. Wipro categorises a few of these centres as 'strategic delivery centres', based on either their importance to Wipro from a business perspective or on their strategic location in relation to a customer's needs.

"Our choice of city to set up a 'global delivery centre' depends on a set of well-articulated parameters that determine its suitability," emphasises Hariprasad Hegde, global head of operations at Wipro. To vet potential investment locations, Wipro uses a seven-point decision matrix, which broadly analyses the availability and cost of human capital, telecommunication infrastructure, the business environment, business conveniences such as hotels, quality of life, security and political stability.

"Talent availability and geographic proximity to major clients is important for global delivery centres," says Mr Hegde. This approach is reflected in its choice of strategic global delivery centres outside India, in places such as Atlanta (USA), Bucharest (Romania), Cebu (The Philippines), Chengdu (China), Curitiba (Brazil), and Monterrey (Mexico).

Before investing in a city, Wipro seeks to better understand, among other things, the potential socio-economic and environmental impacts of its actions. It conducts an analysis of the local economy to forecast how its business operations might generate jobs for the local workforce and contribute to creating a supply ecosystem that further enhances local resources and skills.

Wipro also considers the environmental sustainability of potential investments from a local water, bio-diversity, waste generation, energy, transportation and land use perspective. "A 25,000-person global delivery centre can have a fairly significant impact on its immediate social and ecological environment, something Wipro is extremely sensitive to," Mr Hegde says.

Despite an expanding global presence, "Wipro's global IT delivery and employment footprint is likely to be relatively weighted in favour of India and Asia in the mid-term as Wipro's markets here grow and more cities in this region develop," says Mr Hegde.

[3] Wipro's IT services business accounted for US$5.2bn of the conglomerate's total US$6.9bn in revenues in the fiscal year 2010-11.

Beyond the megacities: Tomorrow's new power brokers?

Considering just the "economic strength" category of the Index—which emphasises a city's overall GDP, growth rate and relative income, making it the highest weighted competitiveness category overall at 30%—a wholly different top 10 list emerges. New York (4th) and Tokyo (8th) are the only developed world cities that remain, while Tianjin, Shenzhen and Dalian top the table. Beyond those, Doha, Guangzhou, Shanghai, Chongqing and Beijing round off the leading cities (see chart 3). From an economic perspective, this showcases the reality of the ongoing rise and rapid urbanisation of emerging markets, especially within Asia.

But a more interesting finding that emerges from this ranking is a relative lack of prominence of the world's so-called megacities, defined here as those with populations of 10m or more. In all, there are 23 such cities within the Index, collectively hosting some 350m people. But only nine of them make the top 30 ranking shown here. This is despite their already outsized economies that give them a built-in advantage; Tokyo and New York, the two largest, both have economies worth in excess of a trillion dollars, for example.

This highlights a key shift that is under way, which is the rise of a second tier of emerging market cities. China already has some 150 cities with at least a million inhabitants; by 2020, analysts expect this number to swell to between 220 and 400 cities, depending on overall growth rates. This will surely propel some hitherto unknown cities onto the world stage. Jaana Remes, a senior fellow at the McKinsey Global Institute, the research arm of consultancy McKinsey & Company, says that cities such as these are likely to account for a rapidly expanding proportion of global growth.

Between now and 2025, according to McKinsey, the proportion of global growth accounted for by developed economies and emerging market megacities will decline from over 70% to about one-third. Meanwhile, almost 40% of growth will come from what McKinsey terms "middleweight" emerging market cities, which have populations between 150,000 and 10m. These cities are expanding rapidly both in

Chart 3: Top 30 cities—economic strength

Rank		Overall economic strength score/100*	GDP 2010-2016 (% real change p.a.)**
1	Tianjin	56.6	12.9
2	Shenzhen	55.4	11.5
3	Dalian	55.0	12.7
4	New York	54.0	2.4
5	Doha	53.7	8.3
6	Guangzhou	53.6	11.3
7	Shanghai	51.8	9.5
8	Tokyo	50.5	1.7
9	Chongqing	49.9	12.2
10	Beijing	49.8	9.4
11	Qingdao	49.4	11.4
12	Chengdu	49.2	11.7
13	Suzhou (Jiangsu)	48.1	10.5
14	Hangzhou	47.6	10.3
15	Singapore	46.0	5.7
16	Bangalore	45.9	10.3
17	Los Angeles	45.7	2.7
18	Houston	45.6	4.4
19	Ahmedabad	45.3	10.1
=20	Hong Kong	43.8	4.9
=20	Hanoi	43.8	10.2
22	Paris	43.6	2.2
=23	Washington	43.4	3.6
=23	Dallas	43.4	4.1
25	Abu Dhabi	42.5	4.7
=26	Mumbai	42.4	8.4
=26	Delhi	42.4	8.9
28	Seattle	42.0	4.2
=29	Taipei	41.9	5.1
=29	London	41.9	2.7

* The overall economic strength score is comprised of five indicators, including real GDP growth. For more information, please see the appendix

** Cumulative average annual growth rate

Source: Economist Intelligence Unit

terms of population and overall GDP.[4] "For companies that are seeking to be in those places where both increasingly wealthy consumers, as well as a lot of the investments are going to be, they do need to look beyond the top cities only," says Ms Remes.

This is not to suggest that the megacities are headed for a period of stagnancy: among the top 30 cities from an economic strength perspective in the Index, the megacities are forecast to expand at a healthy 6.3% over 2010-16. But the middle tier, defined here as those with populations of 2-5m, will outpace that, growing at 8.7% overall.[5]

Nevertheless, the rise of a new middle tier of cities in the coming decade will require a shift in focus for many corporate leaders, many of whom primarily consider developed economies and emerging market megacities as their key growth targets. "We think this is really the new trend going forward and it's perhaps the most challenging trend for many of the companies who are looking to position their portfolios for growth," says Ms Remes.

Naturally, the dynamics of each of these cities will vary widely, as they pursue different growth paths. Equally, the issues that matter to any given business also differ significantly (see the case study on Dell for more). Some cities will become major new sources of consumer demand; others will become new centres of low-cost manufacturing.

China's Tianjin, for example, is heavily promoting its Eco-City project—a more environmentally friendly city concept—which is being developed with significant investment from Singaporean companies in particular, but also many multinational firms, such as electronics firms Hitachi and Philips. In Qatar's Doha, by contrast, the emphasis is on economic diversification, with widespread investment in real estate, steel and cement, financial services, and sport—investments which recently helped the country win the nomination to host the 2022 FIFA World Cup.

Many of these cities will invest hundreds of millions of dollars in city infrastructure, thus making them hugely important targets for infrastructure firms such as GE and Siemens. In recognition of this, Siemens in 2011 set up a dedicated urban infrastructure and services arm, specifically aimed at targeting such opportunities. Highlighting the importance of these new cities, perhaps, it announced that one of its three global centres of competence would be in China. Other firms will surely be following suit.

[4] *Urban world: Mapping the economic power of cities*, McKinsey Global Institute, Mar 2011

[5] For the purposes of this Index, we have defined "middle tier" cities as those with populations of 2-5m. This is different from McKinsey's definition of "middleweight" cities, which have populations between 150,000 and 10m

CASE STUDY: Dell's city selection criteria

Global technology firm Dell operates over 160 sites in 42 countries and is always looking at further expansion. Its decision making process begins with global regions first, then countries, and then individual cities. Within these competing locations, talent availability is often the most important factor. Many of its operations require lots of technically skilled workers. If the talent isn't there, the firm can't scale the business.

Dell therefore sometimes seeks to build talent in partnership with government or educational partners. One example is the city of Porto Alegre in Brazil, where it partners with a local university, investing in scholarships for local students. "Many of them become our full-time employees," notes Dane Parker, the firm's vice president for global facilities.

Other key factors in city selection include political stability, infrastructure, energy costs and reliability, the availability of green energy, and the risk of natural disaster. All these factors depend crucially on which of the firm's various business types is being considered for a particular city. As such, the firm uses a weighting system to ensure that significant factors are given sufficient importance in the process. For example, a proposed data centre may need a robust data privacy environment, while a manufacturing plant would not be considered in a high-risk earthquake zone.

Finally, cities wanting to attract a large and powerful employer like Dell need to be, in its words, "forward thinking". The firm seeks to make long-term commitments in key cities, and "the longer term they're thinking, the easier it is for us to align with them", says Mr Parker.

Talent, jobs and quality of life

Many firms fight to attract highly educated and skilled workers, and as such, many choose new cities for growth on the basis of the potential talent pool located there. An ongoing shift towards a more knowledge-oriented economy is exacerbating this process, meaning that human capital plays a key role in the relative competitiveness of cities. For their part, such workers are attracted to cities that offer them not only good jobs, but also a high standard of living.

Accordingly, the global picture of city competitiveness swings sharply towards developed world cities here. They hold a clear advantage in various factors, such as the quality of both education and healthcare, as well as the relative attractiveness of their environments. Other rankings clearly highlight this. For example, the 2011-12 *Times Higher Education* ranking of the top 200 universities in the world features none from India and just two from mainland China (albeit with a further four from Hong Kong). By contrast, universities in Europe and the United States dominate the list.

The Index shows a clear correlation between human capital (which accounts for 15% of the overall weighting of the Index) and overall competitiveness (see chart 4), highlighting the importance of talent to city competitiveness. Lamia Kamal-Chaoui, head of the urban development programme at the OECD, cites talent as a key differentiator between many cities in developed and emerging economies, with the former focussing on skills development and the latter on low-cost labour. "In the advanced economies, the availability of skills becomes much more important and the issue of the attractiveness of the location becomes much more important," she says.

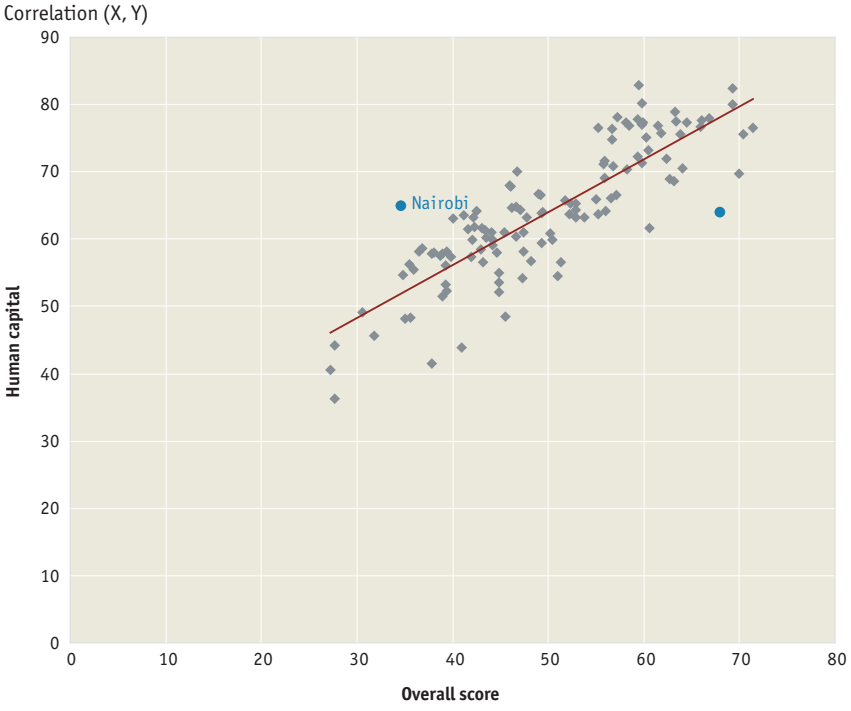
As a result, in the human capital dimension, emerging market cities clearly underperform. The highest placed emerging market city in this category is Santiago (35th), with most others languishing far further down. Changing this will not be easy. Despite huge investments being made in education in particular, such as can be seen in the Middle East over the past decade, building a stock of high quality institutions—and sufficiently compelling environments to attract the highest skilled workers—is a difficult and long-term process. For those Asian cities that are focussed on growth that is oriented

towards lower-cost and lower-skilled workers, this is less of a problem right now. However, for those cities seeking to make the leap into the global knowledge economy, this is a clear challenge for the decade ahead.

"The one thing that can stop a city cold in its tracks is not having enough of the right kind of talented people, or not being able to attract those kinds of people," says Mr Stolarick. Kuala Lumpur is an example of a city whose otherwise strong growth prospects are set back by talent shortages, exacerbated by the steady emigration of skilled locals, many of whom leave for better prospects in Singapore or elsewhere, according to the World Bank.[6]

However, talented individuals are also typically highly mobile. This brings opportunities and challenges for all cities: on the one hand, cities can thus actively compete to attract highly skilled workers; on the other hand, a city that helps develop a strong pipeline of talent may well see them all leave for other cities once they graduate. Boston and Oxford are both synonymous with higher education, but relatively few graduates stay there after graduating.

Chart 4: Human capital versus overall competitiveness
Calculated score 0-100 (100=best)



Source: Economist Intelligence Unit

In this regard, the current advantage held by developed market cities is potentially under threat, thanks to a shortage of jobs. Unemployment in the US, UK and many European states are at long-term highs, with little sign of relief ahead. Accordingly, while cities such as Vancouver, Vienna and Zurich all vie for the top spots on quality of life rankings, they perform far more poorly in terms of job growth. "Just having great quality of life is not enough. You still have to have things for people to do. If you don't have work for them, then it doesn't matter how wonderful your quality of life is, you're not going to be able to attract people," says Mr Stolarick.

However, this argument can only be carried so far, as unemployment rates in developed economies are highest among poorly skilled workers, which are typically also the least mobile. Meanwhile, the world's most upwardly mobile individuals often choose cities such as London and New York as their homes, even if their core businesses are elsewhere. Indian steel magnate Lakshi Mittal may be London's most famous foreign resident, but there are many others, from Malaysia's Tony Fernandes, boss of airline AirAsia, to South Africa's Nathan Kirsh, a property tycoon, who have a home there. Such choices are due to a range of reasons, but the magnetism of these city's attractions and services, as well as other aspects such as safety and personal freedoms, all help to draw in the world's talent.

Nevertheless, the greatest question for the decade ahead is where the world's newly emerging talent will move. Just as America's cities received a huge talent boost in the wake of the Second World War, so

[6] *Malaysia economic monitor: brain drain*, World Bank, Apr 2011

too might emerging market cities in the wake of today's ongoing financial crisis in the West.

Opportunistic cities are spotting the gap: Dubai, Santiago and Singapore are just three examples of cities with specific programmes in place to attract talent from elsewhere. Dubai is rapidly building a business friendly, zero tax environment to attract workers; Santiago is helping host a national initiative to directly incentivise hundreds of entrepreneurs from around the world to move there; and Singapore is bolstering its reputation as the gateway to Asia's growth, with a first-rate living environment to support it. Such cities may have held far less appeal a decade earlier; it's likely they will hold far more a decade hence. Equally, cities such as New York are hardly standing still in their quest to maintain their appeal to the world's top talent (see case study).

CASE STUDY: New York's talent as a competitive edge

New York tops our Index as the most competitive city globally, which is perhaps unsurprising given its strong performance across a diverse array of categories. But Michael Bloomberg, its mayor, is particularly focussed on the city's diversity of career opportunities, excellent quality of life and a job market driven by intellectual capital. "We are the world's most diverse city, and that diversity breeds new ideas and new innovations," he says. "And the fact is, talented people want to live in places that not only offer the best career opportunities, but also the best cultural attractions and highest quality of life."

New York's economy is driven by a range of sources, from the media, arts and fashion, to technology and finance. This generates a range of opportunities, from entry-level tourism jobs to highly-paid Wall Street careers. In 2010, the city was second only to Silicon Valley as a source of venture capital funding in the US. But supplying the demands of a talent-driven market continues to be a challenge. Overall, its ranking for human capital was one of its lowest performances—at joint 18th. Part of this lies out of the city's control: Mr Bloomberg cites inflexible federal immigrations policies as a major roadblock for skilled professionals from around the world who want to migrate to the US.

Nevertheless, New York has a range of initiatives underway to help maintain its competitiveness. For example, it is currently creating a new applied science and engineering campus in partnership with Cornell University and The Technion-Israel Institute of Technology, aimed at expanding its capacity in the applied sciences and to attract more scientists and engineers. This is expected to generate US$6bn in economic activity, draw in over US$1bn in private capital, while creating thousands of temporary and permanent jobs. "[It's] designed to help us attract even more talent," says Mr Bloomberg, "and to ensure that more of the companies that grow out of laboratories start right here."

City size, density and competitive performance

The leading urban agglomerations in the Index vary hugely in size. Tokyo is a megacity of nearly 37m people, Singapore has about 5m, while Zurich has just over 1m. Yet they all rank in the top 10 most competitive cities. So does size matter?

In many regards, size does appear to have a significant impact. Firms have a bigger and more diverse workforce to draw on, as well as greater demand for their products and services. Mr Stolarick at the Martin Prosperity Institute also argues that cities get increasing returns to scale, in terms of patents filed, per capita income and so on. "Size generates tons of advantages, not just economies of scale. As you double in size you more than double other things [such as productivity or patents filed]," he says.

But in many other regards, size can also hinder competitiveness, especially if not properly planned. One obvious example is in transport: while larger cities typically have greater resources to implement public transport networks, they also have a far larger physical space to cover. Sprawling cities with gridlock can impede competitiveness, as can bureaucratic inefficiency and other factors. Accordingly, there can also be diseconomies of scale.

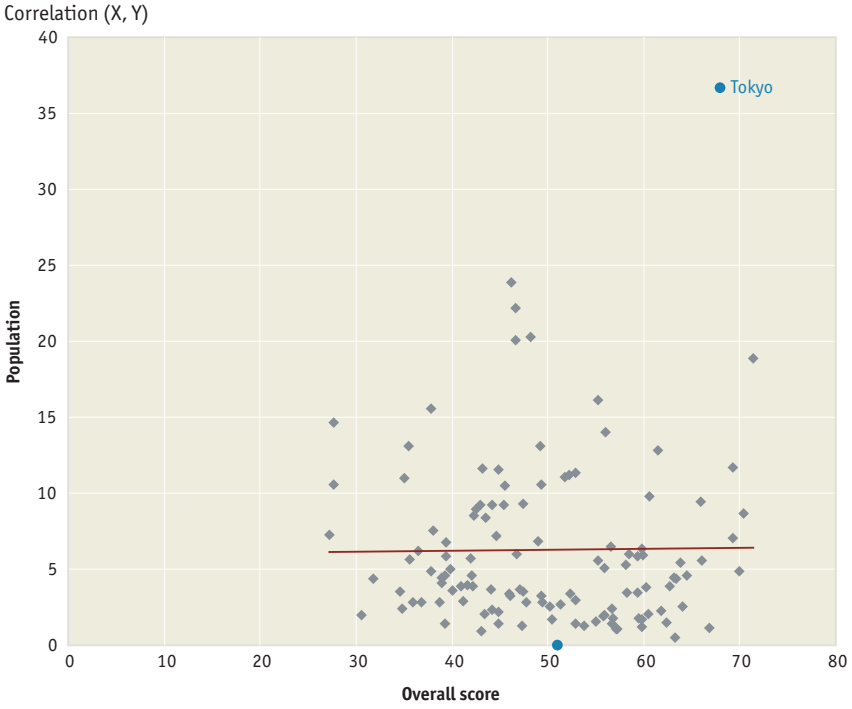
"I think there are many things that can go wrong," says Ms Remes at the McKinsey Global Institute. She gives the example of many Latin American cities that have expanded rapidly, ahead of the capacity of these cities to adapt and grow. This hampers growth. "Right now the growth rate of the top ten cities in the region has been below the mid-sized cities and in many cases even the economies overall," she says.

In this regard, efficiency matters. Hong Kong and Mexico City give two clear examples. Both are large cities, of 7m and nearly 24m people, respectively. However, while Hong Kong is highly competitive (joint 4th), Mexico City (71st) is far less so. Here, density helps. Visitors to either city quickly discover this: Hong Kong's tight density helps ensure that its public transport is both comprehensive and effective, while commuters in Mexico City find themselves locked in traffic with few alternatives.

This example holds more generally: other studies show, for example, that a doubling of density increases a city's productivity by 2-4%.[7] This holds a key lesson for China's rapidly expanding cities,

[7] *Productivity and the density of human capital*, Jaison R. Abel, et al, Federal Reserve Bank of New York Staff Reports, Mar 2010, Revised Sep 2011

Chart 5: Total population versus overall competitiveness
Calculated score 0-100 (100=best)



Source: Economist Intelligence Unit

argues the OECD's Ms Kamal-Chaoui. "They should not focus on the size objective, but more on the efficiency objective," she says. "If you have big cities where you have huge costs of congestion, problems with mobility and problems in the labour market, then you cannot really take advantage of the agglomeration of the economy."

So while size can bring advantages in terms of a city's overall competitiveness, it will only do so if it is carefully planned. Greater density can help, although this isn't necessarily the only solution. Overall, however, there is no clear correlation between absolute population size and overall competitiveness (see chart 5).[8] This is both encouraging to smaller cities looking to punch above their weight, but also a warning to any rapidly expanding city of the need to plan carefully.

[8] There is no comparable data available on city density across all 120 cities

Conclusion: Leapfrogging ahead?

This study has highlighted several aspects of city competitiveness and how they influence a city's overall development. The relative positions of these cities will naturally shift over the coming decade, as they sharpen their various comparative advantages. In particular, the rise of emerging markets will likely make a number of largely unknown cities rather more prominent by 2020. Bandung, Hangzhou, Lagos and Lima, for example, all feature growth rates of 6% or higher, but are familiar to few outside of their home countries today. That will change.

A key question is the speed with which this will happen. Do emerging market cities need to follow the same development lifecycle that Western cities have taken over the past two centuries, moving slowly from an industrial to a post-industrial era? Or can they accelerate through this? Shanghai is already making this evolution in record time. And other cities, particularly within the Gulf, are seeking to leapfrog the industrial phase altogether, using their vast wealth to create cities that can compete on the global stage in various industries. Others aim to leapfrog rivals in specific aspects, such as their communication technologies. For example, some are implementing citywide high-speed wireless networking, entirely bypassing the need to lay cable. This in turn can open up new prospects for various technology firms such as Dell.

The speed question is especially pertinent for the new "middle tier" of emerging market cities, with the highest overall growth rates. Of course, the success of this group isn't guaranteed. For example, many already have significant levels of pollution, which may increasingly hinder progress as they seek to move up the value chain, especially in terms of attracting more skilled labour. To give one example, the OECD has reviewed five metropolitan regions within China's Guangdong province, which are seeking to change how they compete. "This region was highly specialised in low value-added activities, but with the emergence of other regions in China which now offer an even cheaper labour force, they have an imperative to move up the value chain," says Ms Kamal-Chaoui.

To do so, they need to adapt their investment attraction policies, but this in turn requires more

fundamental shifts. "They understand they have to change, [beyond just investing in infrastructure]," says Ms Kamal-Chaoui. "They have a good stock of infrastructure, but it's highly polluted and there are no public spaces and things like this. They now understand that they have to move to something more qualitative."

To truly become globally competitive, these cities will need to work hard to develop softer aspects beyond just growth: their institutional effectiveness, social character, financial maturity and global appeal. Put another way, will these emerging market cities be able to make the leap from attracting just capital to attracting talent as well?

These cities will be competing not only amongst themselves, but also against cities in the developed world, which have legacy advantages, such as strong educational and infrastructure foundations, built up over decades.

Which emerging market cities will leapfrog their peers? Which developed world cities will be able to maintain their primacy? The decade ahead will offer much guidance to these questions.

Appendix: Full methodology

Overview

With more than half of the world's population now living in urban areas, cities are more important than ever before to economic and social development. As mass urbanisation continues apace across the world, particularly in emerging economies, the influence of cities will keep growing. For most countries, developmental success today hinges on the performance of their biggest cities. However, size alone does not inform a city's growth potential. While some megacities (such as New York or Tokyo) are immensely influential, there are smaller ones (such as Hong Kong and Singapore) which have established themselves as globally competitive and influential centres in recent years. Emerging-market cities (such as Tianjin or Ahmedabad), on the other hand, are witnessing double-digit economic growth, and have the potential to grow even faster.

Competitiveness, however, is a holistic concept. While economic size and growth are important and necessary, several other factors determine a city's competitiveness, including its business and regulatory environment, the quality of human capital and cultural aspects. These factors not only help a city sustain high economic growth rate, but also create a stable and harmonised business and social environment.

Against this backdrop, we define 'competitiveness' as cities' demonstrated ability to attract capital, businesses, talent and visitors. We assessed 120 cities across the world and examined 31 indicators for each city. Indicators were grouped under eight distinct, thematic categories: economic strength, human capital, institutional effectiveness, financial maturity, global appeal, physical capital, environment and natural hazards, and social and cultural character. There are 21 qualitative and 10 quantitative indicators.

A city's overall ranking in the benchmark Index is a weighted score of the underlying categories.

Definition and selection of cities

Cities are no longer limited to their political boundaries today. They are rapidly metamorphosing into bigger urban agglomerations or metropolitan areas, with the city proper at the core. New York City, for example, has a population of only 8.2m, compared to 18.9m people living in the New York-Northern New Jersey-Long Island metropolitan area. Typically, an urban agglomeration or metropolitan area is defined as the continuous area encompassing the city proper and smaller cities or towns close to the city's boundaries at comparable urban density levels (World Urbanisation Prospects, United Nations, 2009). In the context of this benchmark, we define "city" as the urban agglomeration or metropolitan area it holds together.

The 120 cities included in our assessment were selected on the basis of their size and regional economic importance. Data availability was a consideration too. To build a relevant universe, we first considered all cities with population estimates of over a million in 2010. From this selection, we excluded cities with an estimated nominal GDP of less than US$20bn in 2008 (the most recent year for which comparable data are available). To ensure a balanced regional representation, we established an upper limit on the number of cities for several large economies: China (11 cities), India (8 cities), and the US (12 cities). Finally, the EIU analyst team reviewed the list and included established financial and commercial centres (e.g., Geneva), as well as important emerging cities (Ahmedabad, Ho Chi Minh City, Nairobi, Panama City, etc), which did not meet our initial population-GDP size criteria.

To preserve analytical rigour, we limited our selection to 120 cities for benchmark assessment this year.

Data sources and indicator normalisation

The EIU collected data for the Index from May to August 2011. Wherever possible, publicly-available data from official sources are used for the latest available year. The qualitative indicator scores were informed by publicly available information, and assigned by the EIU's research team. Qualitative indicators scored by the EIU are often presented on an integer scale of 1-5 (where 1=worst, 5=best). This scale varies for ratings from third party sources.

Indicator scores are normalised and then aggregated across categories to enable an overall comparison. To make data comparable, we normalised the data on the basis of:

Normalised x = (x - Min(x)) / (Max(x) - Min(x))

where Min(x) and Max(x) are, respectively, the lowest and highest values in the 120 cities for any given indicator. The normalised value is then transformed into a positive number on a scale of 0-100. This was similarly done for quantitative indicators where a high value indicates greater competitiveness.

Categories and weights

We assessed 31 indicators across eight thematic categories: economic strength, human capital, institutional effectiveness, financial maturity, global appeal, physical capital, environment and natural hazards, and social and cultural character. The benchmark includes 21 qualitative and 10 quantitative indicators.

Category and indicator weights were assigned by the EIU research team after consultations with internal and external experts. The economic strength of a city (GDP size, pace of growth, income levels,

etc), undisputedly, is a key driver of attractiveness. Investors follow sizable and growing markets. Therefore, we have given a relatively higher weight (30%) to economic strength category, with city's real GDP growth rate as the dominant indicator.

Both demographics and institutional underpinnings are important sources of sustained competitiveness. While emerging economies boast of their demographic dividend, a stable institutional environment is often cited as developed markets' key advantage. Both are important and, therefore, human capital and institutional effectiveness categories carry substantial weights (15% each) in our benchmark assessment. A city's physical infrastructure, financial maturity and global appeal help businesses operate efficiently. While with the growing use of technology, concerns around accessibility and connectivity are becoming less urgent, these factors remain important in driving a city's competitiveness. Physical capital, financial maturity and global appeal categories have been assigned a 10% weight each.

Although not a non-negotiable condition for competitiveness, social and cultural character of a city plays an important role in shaping its attractiveness for talent and visitors. This category has been weighted at 5%. With the growing incidence of natural disasters, investors are increasingly building locational risks into their operational strategies. Equally, the environmental quality of cities is increasingly being compared and benchmarked as cities lead the countries' charge against climate change. Taking note of this trend, our benchmark framework includes environment and natural hazards as a category with a 5% weight.

The following table provides a brief description of indicators, data sources and weights:

Indicator	Unit	Year	Source	Weight	Description
Economic strength				**30.0%**	
Nominal GDP (PPP)	US$ billion	2008	EIU analysis	25.0%	Nominal GDP reflecting differences in costs of living
GDP per capita (PPP)	US$	2008	EIU analysis	10.0%	Nominal GDP (PPP) per person.
Households with annual consumption >US$14,000 (PPP)	Percentage	2010	C-GIDD, EIU analysis	10.0%	Proportion of a city's households with annual consumption over US$14,000 (PPP).
City real GDP growth rate	CAGR	2010-2016	C-GIDD, EIU analysis	45.0%	Cumulative average annual growth rate (CAGR).
Regional market integration	EIU rating	2011-2015	EIU analysis	10.0%	5=The country belongs to an economic union. There is freedom of movement for goods, people and capital; 1=Not member of any regional grouping.
Human capital				**15.0%**	
Population growth	CAGR	2010-2020	World urbanisation prospects 2009, United Nations; Demographia World Urban Areas, 2011; Country statistical agencies; and EIU estimates	12.5%	Cumulative average annual growth of population size.
Working-age population	Percentage of total population	2010	Country statistical offices; EIU analysis	8.3%	Working-age population (15-64 years) as a percentage of the total population.
Entrepreneurship and risk-taking mindset	EIU rating	2010	Eurobarometer survey (2009); World Values Survey; Global Entrepreneurship Monitor 2010; BBC World Service Poll-GlobeScan/PIPA survey; and EIU analysis	25.0%	5=Strong entrepreneurial/risk-taking mindset; 1=Weak entrepreneurial/risk-averse mindset; Ratings are based on fear of failure, entrepreneurship/self-employment as a career choice and entrepreneurial intentions.
Quality of education	EIU rating	2010	EIU analysis	33.3%	5=Highest, 1=Lowest; Availability and quality of private education, and general public education indicators.
Quality of healthcare	EIU rating	2010	EIU analysis	8.3%	5=Highest, 1=Lowest; Availability and quality of public and private healthcare, and availability of over the counter (OTC) drugs.
Hiring of foreign nationals	EIU rating	2011- 2015	EIU analysis	12.5%	5=Very easy; 1=Very difficult. Assessment includes immigration barriers, rules on employment of local nationals and other unofficial barriers.
Institutional effectiveness				**15.0%**	
Electoral process and pluralism	EIU rating	2010	EIU Democracy Index 2010	14.3%	10=Free and fair electoral process and vibrant pluralism; 1=Limited electoral processes
Local government fiscal autonomy	EIU rating	2010	Global Observatory on Local Democracy and Decentralisation, United Cities and Local Governments	28.6%	1=No fiscal autonomy; 2=Some fiscal discretion, but extensive controls exist; 3=Fair fiscal independence, but some controls exist; 4=Extensive fiscal autonomy.
Taxation	EIU rating	2011	EIU analysis	14.3%	5=Highest, 1=Lowest; Standard VAT rate in the city and the broader complexity of tax regime.
Rule of law	World Bank score	2009	World Bank	14.3%	2.5=Very good; -2.5=Very poor; Assessment of confidence in and abide by rules of society.
Government effectiveness	EIU rating	2010-2011	Transparency International; EIU analysis	28.6%	Based on the level of corruption (10=Least corrupt, 0=Most corrupt) measured by Corruption Perceptions Index 2010, Transparency International, and EIU analysis of effectiveness in policy implementation, and quality of bureaucracy (5=Highest, 1=Lowest).
Financial maturity				**10.0%**	
Breadth and depth of the financial cluster	EIU rating	2011	Z/Yen Group's Global Financial Centres Report 2011; EIU analysis	100%	7=Established global cluster which is broad and deep; 1=City is lacking even basic financial infrastructure.

Indicator	Unit	Year	Source	Weight	Description
Global appeal				**10.0%**	
Number of Fortune 500 companies	Number	2011	Fortune Magazine	20.0%	Number of world's largest corporations by revenues headquartered in the city.
Frequency of international flights	Flights per week	2011	OAG Aviation	20.0%	Frequency of international flights per week from the city's major airport.
No of international conferences and conventions	Number	2010	International Congress and Convention Association (ICCA)	20.0%	International conferences and seminars must be attended by at least 50 participants; organised on a regular basis (one-time events are not assessed); and move between countries.
Global leadership in higher education	EIU rating	2010	QS World University; Financial Times Global MBA rankings	20.0%	Number of universities, technology and engineering programmes and MBA programmes in the city.
Globally-renowned think-tanks	Number	2009	The Think Tanks and Civil Societies Program, The Global "Go-To Think Tanks", University of Pennsylvania	20.0%	Number of think tanks nominated to the list by a panel of experts and scholars.
Physical capital				**10.0%**	
Quality of physical infrastructure	EIU rating	2010	EIU analysis	42.9%	5=Highest, 1=Lowest; Based on quality of road network in the city, regional or international links, and access to and quality of seaport.
Quality of public transport	EIU rating	2010	EIU analysis	14.3%	5=Excellent quality, public transport systems suitable for executives to use - regular and efficient; 1=Extremely bad quality, the transport network is largely outdated.
Quality of telecommunications infrastructure	EIU rating	2010	EIU analysis	42.9%	5=Very good, extensive and modern network, very few disruptions, speedy and regular maintenance available; 1=Very poor, inadequate and out of date network, disruptions are common, maintenance extremely poor and very slow.
Environment and natural hazards				**5.0%**	
Risk of natural disasters	EIU rating	2011	Global Risk Data Platform, United Nations Environment Programme; NATHAN (Natural Hazards Assessment Network) Risk Suite, Munich Re; EIU analysis	33.3%	5=Very high risk; 1=Very low risk; Natural hazard risk assessment includes earthquakes, storm surges, floods, tsunamis, tornadoes and wildfires. The indicator looks at the frequency of past events to ascertain risk level for each city.
Environmental governance	EIU rating	2010	EIU analysis	66.7%	30=Very good, 0=Very poor; Assessment of city's government's commitment towards monitoring and standards of water, waste and air.
Social and cultural character				**5.0%**	
Freedom of expression and human rights	Rating	2011	Freedom House	20.0%	10=Highest, 1=Lowest. Examines freedom of expression and belief, associational and organisational rights, rule of law, personal autonomy, and individual rights.
Openness and diversity	EIU rating	2010	EIU analysis	20.0%	5=Very open and diverse; 1=Very closed and homogenous. Assessment of ethnic diversity, variety of languages spoken, ubiquity of English language use and general acceptance of different lifestyles.
Presence of crime in the society	EIU rating	2010	EIU analysis	20.0%	10=Highest, 0=Lowest; Presence of petty and violent crime in city.
Cultural vibrancy	EIU rating	2010	EIU Liveability Survey; EIU analysis	40.0%	5=Highest, 1=Lowest; Cultural vibrancy considers availability of quality restaurants, presence of a world-known cuisine, quality theatre production, classical and modern music concerts, presence of a one or more UNESCO heritage site and presence of one of more international book fairs.

Economic strength (30%)

To gauge the economic strength of cities, we studied indicators that analyse market size, purchasing power and growth prospects. For market size estimates, nominal GDP data in local currency units were collected. We then used International Monetary Fund's implied purchasing power parity (PPP) conversion rate to calculate nominal GDP (PPP) in US dollars. This allows us to compare the size of city economies, by taking into account the cost of living at the national level.

Another aspect of economic strength, particularly for emerging-market cities, is the size of the middle class, a segment that contributes greatly to economic growth. For the purposes of this study, we define the middle class as households with average annual consumption above US$14,000 (PPP). Finally, to identify and reward cities with robust growth potential, we examine cities' real GDP growth prospects over the next five years.

In many cases, constrained by the unavailability of credible data, the Economist Intelligence Unit relied on estimates and approximations.

Human capital (15%)

A large, skilled, healthy and productive labour force is a key driver of competitiveness, particularly for emerging-market cities with favourable demographics. To study the attractiveness of a city on this dimension, we gathered information on the size of working-age population, quality of education and healthcare. Additionally, we also examined entrepreneurial and risk-taking mindset among citizens, as such attitudes drive new businesses, which in turn create jobs and add to the overall growth. This indicator, however, is not a measure of the environment for entrepreneurship. Finally, we believe the strength of a city's labour force is not limited to its resident population. Ease of hiring foreign nationals, defined in our study as low immigration barriers and flexible regulations over hiring foreigners, makes a city more attractive to businesses (e.g., Singapore).

Institutional effectiveness (15%)

To assess cities' institutional effectiveness, we examined indicators that encourage stability of regulations, predictability and fairness of political processes and effectiveness of the system. Local government's fiscal autonomy and government effectiveness were weighted relatively higher within this category. Local governments' with greater autonomy to raise revenues and invest in the development of the city, like New York, are believed to be more effective in formulating and implementing growth strategies.

Financial maturity (10%)

For this category, we evaluated the breadth and depth of the city as a financial cluster. On one extreme, there are established global clusters (e.g., NY, London, Singapore, etc), which are both broad (diverse) and deep (specialist), covering various industry segments such as asset management, investment banking, insurance, professional services and wealth management. On the other end of the scale are cities which don't even have adequate transactional financial infrastructure.

Global appeal (10%)

We studied the attractiveness of each city by considering the presence of globally renowned institutions (Fortune 500 companies, world-renowned think-tanks, top universities and colleges) headquartered in

the city, and its international orientation. This mix is an indication of diversity, global attractiveness and civil society strength in each city, factors which arguably add to a city's competitiveness.

Physical capital (10%)

This category reflects the availability of and access to developed and efficient infrastructure (road networks, international links, public transport and telecommunications), which helps businesses operate more efficiently. It also has an element of quality of life for residents and visitors. Emerging-market cities are increasingly harnessing telecommunications in much the same way as developed-market companies harnessed the railroads and the telegraph. Taking note of this great equaliser, quality of telecommunication infrastructure has been included as a prominent indicator in the physical capital category.

Environment and natural hazards (5%)

Environmental factors may affect both decision to start a new businesses and an individual's desire to visit or live in the city. We analysed the city government's commitment to maintain environmental standards by collecting data on codes, standards and strategies related to air, water and waste. This category also includes natural disaster hazard risk. As it is difficult to conduct an accurate, scientific assessment of natural disaster risk, we looked at the frequency of past events to ascertain hazard levels in each city.

Social and cultural character (5%)

This category encompasses several liveability aspects that add dynamism to a city. We argue that these factors add vibrancy that attracts talent and enhance a city's global appeal. Cultural vibrancy of the city has an additional benefit: the potential to develop the creative industries' cluster, which in turn generates greater economic benefits through the multiplier effect.

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